

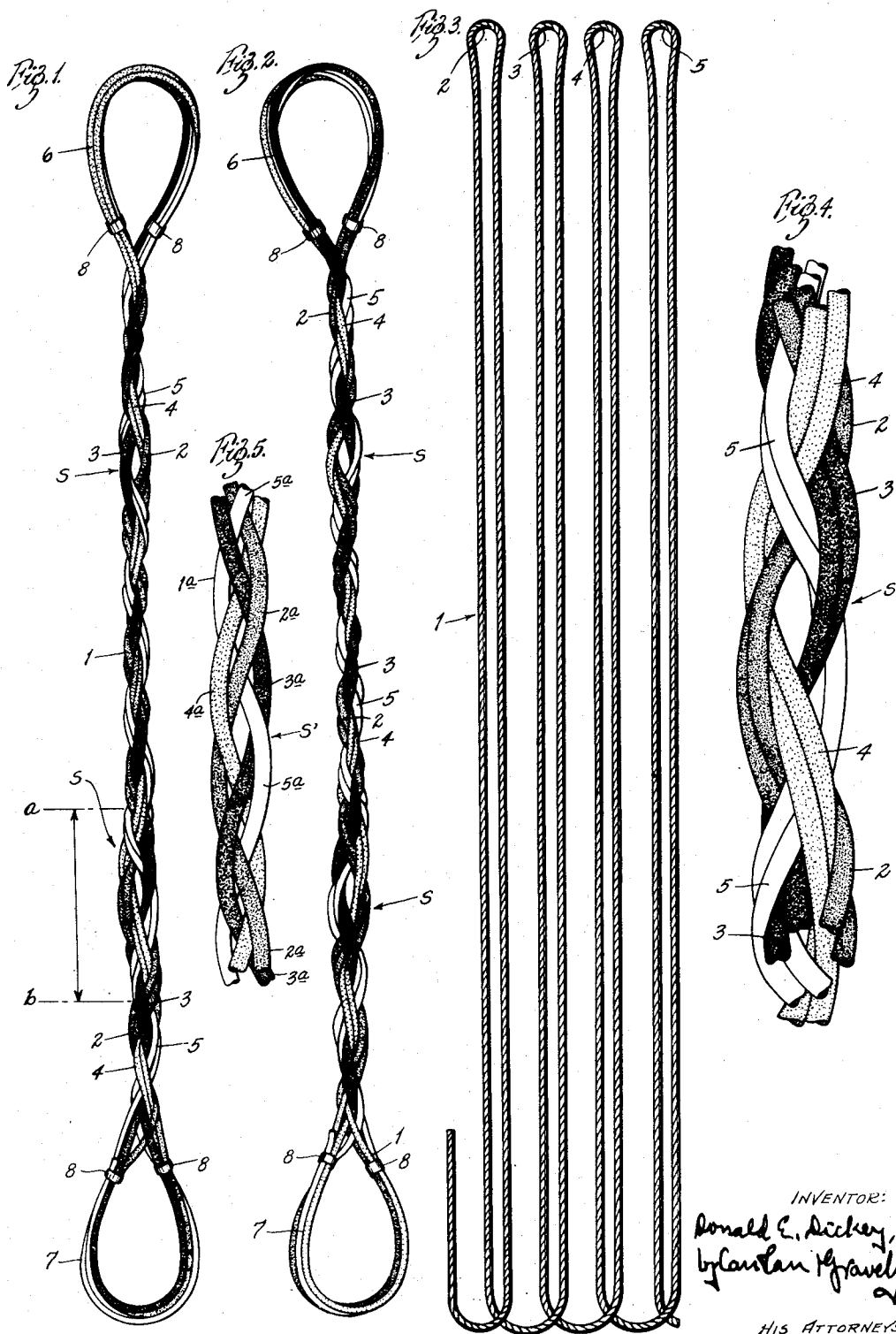
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SLING

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SLING

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My invention relates to slings adapted for use in hoisting and lowering objects, as by means of cranes having hooks thereon adapted to receive the eyes of slings, and, more particularly, to plaited or braided slings.

It has for its principal object a braided or plaited sling formed from a single piece of wire rope, hemp rope or the like which has only one splice and in which the twisting tendencies are neutralized so it will not have the tendency of twisting upon itself when carrying a load as is the case with ordinary slings. A further object is a sling which may be manufactured with a minimum of twisting forces to be overcome by the braiding operator, thus minimizing the labor required in the manufacture thereof and speeding manufacturing operations. An additional object is a flexible sling in which internal friction and wear are minimized.

The invention consists principally in a braided sling having "crossovers" or reversals in braiding direction about one-fourth of the length of the sling from the ends thereof and in the parts and combinations and arrangements of parts herein-after described and claimed.

In the accompanying drawing wherein like reference numerals refer to like parts wherever they occur,

Fig. 1 is a plan view of a sling embodying my invention,

Fig. 2 is a plan view of the sling taken from the side opposite Fig. 1,

Fig. 3 is a diagrammatic view of the arrangement of the wire rope prior to the braiding thereof,

Fig. 4 shows an enlarged view of portion a—b of the sling shown in Fig. 1 and illustrating one of the crossovers; and

Fig. 5 is a plan view of a portion of a modified sling illustrating a crossover therein.

In the drawing a sling is illustrated which is preferably made from a single piece of wire rope 1. However, the sling may be made from several wire ropes and, if desirable, the rope or ropes may be of other materials, as for example, manilla hemp.

As shown in Fig. 3, the wire rope, preliminary to braiding, is formed into four loops or double strands for the braiding of the sling, strands 2 and 5 being the outer loops and strands 3 and 4 being the inner loops.

The sling is formed by gathering the loops opposite the free ends thereof and arranging them into an eye 6 and the body portion of the sling is braided. The difference in shading of

the different parts or strands of the sling in the drawing is to facilitate the following of the braiding method. Any suitable method may be used for the braiding. However, in the type of braiding shown, strands 2 and 5 are crossed horizontally and strands 3 and 4 are crossed vertically. Strands 2 and 5 are crossed with the right hand strand crossing on top of the left so that strand 5 rotates clockwise and strand 2 rotates counter-clockwise. Strands 3 and 4 are crossed with the upper strand crossing to the right of the lower so that strand 4 rotates in a clockwise direction and strand 3 in a counter-clockwise direction.

At about one-fourth the length of the sling, the direction of the braiding is reversed to form a crossover, generally indicated by s. Strands 2 and 5 which are crossed horizontally then cross with the left hand strand crossing on top of the right hand strand so that strand 2 rotates clockwise and strand 5 rotates counter-clockwise. Strands 3 and 4 which are crossed vertically then cross with the upper strand crossing to the left of the lower so that strand 3 rotates in a clockwise direction and strand 4 in a counter-clockwise direction.

At about three-quarters of the length of the sling, the direction of the braiding is again reversed to form another crossover. Strands 2 and 5 are braided as they were originally and strands 3 and 4 are also braided as they were originally.

After completing the braiding, another eye 7 is formed by gathering the free ends of the loops together. Small strips 8 may be placed around the strands in the eyes to hold the strands together so as to retain the shape of the eye.

The free ends of the wire rope which go to make up the eye 6 may be spliced together or otherwise united to form an endless member. The first braiding operation sets up a twist in the sling. Further braiding after the first crossover relieves this twist and then sets up an opposite twist, which is then relieved or neutralized during the final braiding, after the second crossover. Thus, the finished sling is free from any inherent twisting tendency.

The hereinbefore described device has numerous advantages. The sling hangs free and open, due to the freedom from inherent twist. There is no crossover in the midlength portion of the sling where it would be mashed or bent due to engagement with the load but the crossovers are in the straight stretches of the sling, where they are subject only to tension.

In the manufacture and braiding of ordinary slings, considerable twisting pressure is built up which must be overcome by the braider, necessitating additional labor and slowing down the work considerably. The use of two crossovers reduces the amount of twist that is built up and thus reduces the work of braiding the sling and expedites the operation.

In the modification illustrated in Fig. 5, a four part sling is shown. Prior to braiding the four part sling, the wire rope 1a is looped as in the left hand half of Fig. 3 with two small loops at the top and a large loop at the bottom. With this arrangement, the free ends of the wire rope form strands 2a and 5a for braiding and the sides 15 of the large loop for inner strands 3a and 4a for braiding the sling.

To form the four part sling, the two small loops shown at the top of the left half of Fig. 3 are gathered together to form an eye. The free ends 20 of the wire rope forming outer strands 2a and 5a are crossed through the loop with the right hand strand crossing on top of the left. The loop is then twisted or rotated to the right a half turn and strands 2a and 5a are again crossed through the loop with the right hand strand crossing on top of the left. Thus, strands 5a and 4a rotate clockwise and strands 3a and 2a rotate counter-clockwise.

A crossover generally indicated by S¹ is formed 30 by reversing the direction of the braiding. Strands 5a and 2a are crossed through the loop with the left hand strand crossing on top of the right hand strand and the loop is then twisted to the left. Strands 5a and 2a are crossed 35 through the loop with the left hand strand crossing on top. Thus, strands 5a and 4a rotate counter-clockwise and strands 3a and 2a rotate clockwise.

Obviously, numerous modifications may be made, as for example, in larger slings, one or more additional crossovers may be made, and I do not wish to be limited to the precise construction shown.

What I claim is:

1. A sling comprising a braided body portion having eyes at each end, said braided body portion having no crossover in its midlength portion but having crossovers substantially one-quarter of the distance from the ends thereof.

2. A sling comprising a single rope formed into a plurality of strands, said sling having a braided body portion, and the direction of said braiding being reversed at only two points to form crossovers, said crossovers being located on each side 50 of the middle portion of said sling.

3. A sling comprising a single rope formed into strands, said strands being braided with alternate

strands rotating in opposite directions, the direction of the braiding of said strands being reversed at two points only, said points being about one-quarter of the distance from each end of said sling, and the ends of said sling being formed into eyes.

4. A sling comprising a single cable formed into four double strands, said strands being braided with the outer strands being crossed horizontally 10 and the inner being crossed vertically and with alternate strands rotating in opposite directions, the direction of said braiding being reversed at two points to form crossovers, said crossovers being located on each side of the middle portion of said sling, and said sling having eyes adjacent to each end of said braided portion.

5. A sling composed of similar strands all plaited together with each strand arranged like the other strands, said sling having crossovers all of which are at a distance from the middle of its length.

6. The process of making a rope sling which consists in forming a rope into four loops, gathering one end of each loop into an eye, then braiding together the body portions of the loops and then gathering the other end of each loop into a second eye, the direction of braiding being reversed at intervals as the work proceeds to offset the torsional stress occasioned by braiding.

7. The process of making a sling of the kind described which consists in forming a rope into four loops, forming an eye at one end of said loops by gathering said ends, then, starting at said eye, braiding together the body portions of the loops in one direction to a point distant from the starting end of the sling approximately one fourth of the length of the sling, then forming a crossover and continuing the braiding in the opposite direction to a point approximately three quarters of the length of the sling from said starting end of the sling and then forming a second crossover and continuing the braiding in the original direction and forming a second eye at the end of the braided portion.

8. The process of making a sling of the kind described which consists in forming a rope into four loops, forming an eye at one end of said loops by gathering said ends, then, starting at said eye, braiding together the body portions of the loops in one direction for a distance, then, to relieve the torsion, forming a crossover and continuing braiding in the opposite direction for a distance and so on, all crossovers being elsewhere than midway between the ends of the sling, and then forming a second eye at the end of the braided portion.

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